

TOUGHSONIC[®] CHEM 10

ULTRASONIC LEVEL & DISTANCE SENSOR



DESCRIPTION

The Toughsonic Chem Ultrasonic Sensors are the more rugged version of the Toughsonic General purpose line, suitable for use in diesel fuels and chemical level applications in closed or open tanks. These durable, compact ultrasonic level sensors measure a wide variety of liquids from diesel fuel in rail locomotives to chemical tanks in the paper and food processing industries. The Toughsonic Chem 10 sensor provides non-contact measurements at distances up to 10 feet (3m), with an optimum range of 4 to 80 inches (100mm to 2m). Heavy duty electronics are epoxy potted into a polyvinylidene fluoridate (PVDF) housing that physically isolates the transducer and electronics from chemicals and can withstand exposure to both acids and bases.

APPLICATIONS

- PVDF Housing for more rugged environments
- Can withstand exposure to variety of fuels, acids and bases
- Optimal Measuring Range: 8 inches - 156 inches (200mm to 4m)
- Voltage & 4-20mA outputs
- Operating Temperature: -40 to +158°F (-40 to +70°C)
- RS-232 & RS-485 Communication protocols

PERFORMANCE SPECIFICATIONS

Optimum Range	80 in. (2 m)	Max Range	20 feet (6.1 m)
Deadband	Typ. < 4 in. (100 mm)	Adjustment	SenixVIEW software
Case Material	PVDF	Configuration	Stored in non-volatile memory
Temperature	-40 to 158 F (-40 to 70 C)	Outputs	Five selectable, plus serial data Rugged piezoelectric
Humidity	0 to 100% operating	Transducer	NEMA-4X, NEMA-6P, IP68
Compensation	Temperature compensated	Protection	NEMA-4X, NEMA-6P, IP68
Resolution	Digital: 0.0034 in. (0.086 mm); Analog: 4099 steps (0-10 VDC), 3279 steps (4-20 mA)		
Repeatability	Greater of +/-0.03 in. (0.76 mm) or 0.2% of target distance in stable environment		
Update Rate	20 Hz (50 ms), SenixVIEW adjustable; affected by SenixVIEW filter selections		
Voltage Output	10-30 VDC, 50 mA maximum (not including output currents)		
Current Loop #1	0-10, 0-5 VDC or PC customized; 10 mA max. (*)		
Current Loop #2	Current sourcing 4-20 mA or PC customized, max. loop 450Ω (*)		
Sinking Switch	Current sinking 4-20 mA or PC customized, max. loop 450Ω (*)		
Sourcing Switch	150 mA max. @ 40 VDC max., teachable set point & polarity, fault indication		
RS-232, RS-485	150 mA max. @ input voltage, teachable set point & polarity, fault indication Modbus protocol, 9600-115200 baud (selectable), 8 data bits, 1 stop, no parity		

Target Requirements

Target	Detects flat or irregular surfaces. Target surface must reflect sound back to sensor.
Max. Distance	Affected by size, shape, orientation of target (sound level reflected back to sensor), environment Restrict use to Optimum Range when using over a wide range of environmental conditions
Granular Solids	De-rate max range by 50%; range affected by material density and orientation
Optical	Orient sensor beam perpendicular to target surface for best performance

CABLE CONNECTIONS

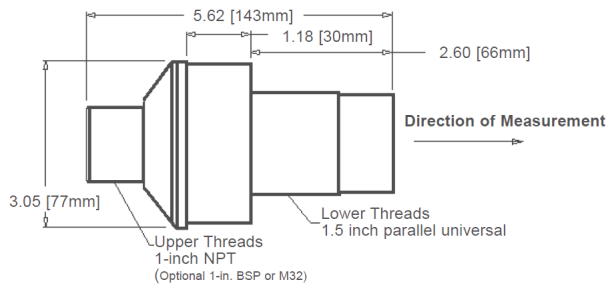
Cable	Wire	Description
Power	Brown	10-30 VDC @ 50 mA maximum; Typical: 45 mA @ 24 VDC (**)
Ground	Blue	Power and interface common
Voltage Output *	Violet	0-10 VDC, 0-5 VDC or custom end values between 0 and 10 VDC
Current Loop Output *	Green	4-20 mA sourcing (adjustable end values between 4 and 20 mA)
Current Loop Output *	Orange	4-20 mA sinking (adjustable end values between 4 and 20 mA)
Switch #1 Output	Black	Sinking ("NPN") or Sourcing ("PNP"), user selected
Switch #2 Output	White	Sinking ("NPN") or Sourcing ("PNP"), user selected
RS-232 out / RS-485-	Gray	Serial data connection (depends on model - see model selection)
RS-232 in / RS-485+	Yellow	Serial data connection (depends on model - see model selection)

PART NUMBERS

Model Number	Description
LVL-100-232	Serial RS-232 interface (PC COM port compatible)
LVL-100-485	Serial RS-485 interface (allows addressable multi-sensor networks)

Senix also offers interconnection, communication, mounting, and display components

DIMENSIONS



Mechanical

Mounting Threads:

Lower 1-1/2-in. Parallel

Upper 1-in. NPT

(1 in. BSP tapered, or M32 x 1.5 metric by special order)

Attached Cable:

PUR jacket, 6.5ft (2 m) long

Weight:

21.2 oz. (0.60 kg)

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